

ABSTRACT

A NEMA 4 watertight irradiation apparatus is provided for irradiating food and pharmaceutical packaging. The irradiation apparatus employs a microwave excited ultraviolet radiation generator that includes an electrodeless lamp that produces ultraviolet radiation. The UV radiation generator is enclosed within a watertight housing having a floor in which an irradiation window opening is defined. A quartz window is mounted in a frame at the window opening at the bottom of the housing. The quartz window allows UV radiation from the microwave powered UV lamp of the ultraviolet radiation generator to pass from the lamp to the target area, which is typically a moving conveyor belt located beneath the housing. Inlet and outlet air ducts in the removable lid of the housing circulate ambient air to cool both the magnetron and the lamp of the UV radiation generator. The irradiation apparatus of the invention meets NEMA 4 standards for a watertight apparatus. The method of the invention increases throughput by decreasing downtime when interruptions to the conveyor system occur.